

CLAIMS

1 1. A laser system, comprising:
2 at least a first laser source and a second laser source;
3 at least a first fiber coupled to the first laser source;
4 at least a second fiber coupled to the second laser source; and
5 a fiber switching device coupled to the first and second fibers, the fiber switching
6 device configured to provide laser delivery from each of the first and second fibers
7 without additional optical alignment.

1 2. The system of claim 1, further comprising:
2 a laser delivery device coupled to at least one of the first and second fibers.

1 3. The system of claim 2, wherein the laser delivery device is selected from,
2 a laser slit lamp adapter, an indirect ophthalmoscope, a laser operating microscope, a
3 direct ophthalmoscope, an intraocular probe, a scanning laser ophthalmoscope, a
4 fundus camera, a laparoscope, an endoscope, a microscope, and a handheld laser
5 delivery device.

1 4. The system of claim 1, further comprising:
2 a spot size adjustment device coupled to at least one of the first and second
3 fibers.

1 5. The system of claim 4, wherein the spot size adjustment device provides
2 automatic sensing of at least one of an output end or an input end of the first and
3 second fibers.

1 6. The system of claim 2, wherein the laser delivery device includes a spot
2 size adjustment device

1 7. The system of claim 1, wherein the first and second fibers have different
2 diameters.

1 8. The system of claim 1, wherein the fiber switching mechanism is selected
2 from, manual, electromechanical and optomechanical.

1 9. The system of claim 1, wherein the first and a second laser sources are
2 selected from a , diode laser, ion laser, dye laser, Ti:sapphire laser, Alexandrite laser,
3 and solid state laser.

1 10. A laser system comprising:
2 at least a first laser source and a second laser source;
3 at least a first fiber coupled to the first laser source;
4 at least a second fiber coupled to the second laser source; and
5 a fiber switching device coupled to the first and second fibers, the fiber switching
6 device configured to provide repositioning of and laser delivery from each of the first
7 and second fibers without additional optical alignment.

1 11. The system of claim 10, further comprising:
2 a laser delivery device coupled to at least one of the first and second fibers.

1 12. The system of claim 11, wherein the laser delivery device is selected from,
2 a laser slit lamp adapter, an indirect ophthalmoscope, a laser operating microscope, a
3 direct ophthalmoscope, an intraocular probe, a scanning laser ophthalmoscope, a
4 fundus camera, a laparoscope, an endoscope, a microscope, and a handheld laser
5 delivery device.

1 13. The system of claim 10, further comprising:
2 a spot size adjustment device coupled to at least one of the first and second
3 fibers.

1 14. The system of claim 13, wherein the spot size adjustment device provides
2 automatic sensing of at least one of an output end or an input end of the first and
3 second fibers.

1 15. The system of claim 11, wherein the laser delivery device includes a spot
2 size adjustment device

1 16. A laser system comprising:
2 a laser source;
3 at least a first fiber capable of being coupled to the laser source;
4 at least a second fiber capable of being coupled to the laser source; and
5 a fiber switching mechanism configured to provide laser delivery from each of the
6 first and second fibers without the need for additional optical alignment,

1 17. The system of claim 16, further comprising:
2 a laser delivery device coupled to at least one of the first and second fibers.

1 18. The system of claim 17, wherein the laser delivery device is selected from,
2 a laser slit lamp adapter, an indirect ophthalmoscope, a laser operating microscope, a
3 direct ophthalmoscope, an intraocular probe, a scanning laser ophthalmoscope, a
4 fundus camera, a laparoscope, an endoscope, a microscope, and a handheld laser
5 delivery device.

1 19. The system of claim 16, further comprising:
2 a spot size adjustment device coupled to at least one of the first and second
3 fibers.

1 20. The system of claim 19, wherein the spot size adjustment device provides
2 automatic sensing of at least one of an output end or an input end of the first and
3 second fibers.

1 21. The system of claim 17, wherein the laser delivery device includes a spot
2 size adjustment device.

1 22. The system of claim 16, wherein the first and second fibers have different
2 diameters.

1 23. The system of claim 16, wherein the fiber switching mechanism is
2 selected from, manual, electromechanical and optomechanical.

1 24. The system of claim 16, wherein the first and a second laser sources are
2 selected from a , diode laser, ion laser, dye laser, Ti:sapphire laser, Alexandrite laser,
3 and solid state laser.

1 25. A laser system comprising:
2 a laser source;
3 at least a first fiber capable of being coupled to the laser source;
4 at least a second fiber capable of being coupled to the laser source;
5 a fiber switching mechanism configured to provide repositioning of and laser
6 delivery from each of the first and second fibers without the need for additional optical
7 alignment, and
8 a spot size adjustment device coupled to at least one of the first and second
9 fibers.

1 26. The system of claim 25, further comprising:
2 a laser delivery device coupled to at least one of the first and second fibers.

1 27. The system of claim 26, wherein the laser delivery device is selected from,
2 a laser slit lamp adapter, an indirect ophthalmoscope, a laser operating microscope, a
3 direct ophthalmoscope, an intraocular probe, a scanning laser ophthalmoscope, a
4 fundus camera, a laparoscope, an endoscope, a microscope, and a handheld laser
5 delivery device.

1 28. The system of claim 26, wherein the further comprising:
2 a spot size adjustment device is coupled to the laser delivery device.

1 29. The system of claim 25, wherein the spot size adjustment device provides
2 automatic sensing of at least one of an output end or an input end of the first and
3 second fibers.

1 30. The system of claim 25, wherein the first and second fibers have different
2 diameters.

1 31. The system of claim 25, wherein the fiber switching mechanism is
2 selected from, manual, electromechanical and optomechanical.

1 32. The system of claim 25, wherein the first and a second laser sources are
2 selected from a , diode laser, ion laser, dye laser, Ti:sapphire laser, Alexandrite laser,
3 and solid state laser.

1 33. A laser system, comprising:
2 a slit lamp adapter;
3 a plurality of laser sources;
4 a plurality of fibers, wherein at least one of the fibers is coupled to one of the
5 laser sources and another of the fibers is coupled to another of the laser sources,
6 wherein light from said laser sources are coupled to the slit lamp adapter;
7 wherein the plurality of fibers have core diameters that are the same.

1 34. The system of claim 33 further comprising a spot size adjustment device is
2 coupled to the fibers.

1 35. The system of claim 33 further comprising a fiber switching mechanism
2 configured to provide repositioning of and laser delivery from each of the fibers without
3 the need for additional optical alignment.

1 36. The system of claim 33 further comprising a fiber sensing mechanism.

1 37. A laser system, comprising:
2 a plurality of laser sources;
3 a plurality of fibers, wherein at least one of the fibers is coupled to one of the
4 laser sources and another of the fibers is coupled to another of the laser sources;
5 wherein the plurality of fibers each have different core diameters.

1 38. The system of claim 37 further comprising:
2 a spot size adjustment device coupled to the fibers.

1 39. The system of claim 37 further comprising a fiber switching mechanism
2 configured to provide repositioning of and laser delivery from each of the fibers without
3 the need for additional optical alignment.

1 40. The system of claim 37 further comprising a fiber sensing mechanism.

1 41. A laser system, comprising:
2 a single laser source;
3 a plurality of fibers, wherein at least one of the fibers is coupled to the laser
4 source and at least another of the fibers is also coupled to the laser source;
5 wherein the plurality of fibers have each have a different core diameter, said
6 fibers each create a different spot size from the laser source and said fibers create a
7 range of spot sizes greater than 20:1.

1 42. The system of claim 41, further comprising a spot size adjustment device
2 is coupled to the fibers.

1 43. The system of claim 41, further comprising a fiber switching mechanism
2 configured to provide repositioning of and laser delivery from each of the fibers without
3 the need for additional optical alignment.

1 44. The system of claim 41, further comprising a fiber sensing mechanism.

1 45. A laser system, comprising:
2 a single laser source capable of emission of multiple laser wavelengths;
3 a plurality of fibers each coupled to the single laser source, light from the single
4 laser source being coupled to a laser delivery device; and
5 wherein the plurality of fibers have each have a different core diameter.

1 46. The system of claim 45 further comprising, a spot size adjustment device
2 coupled to the fibers.

1 47. The system of claim 45 further comprising, a fiber switching mechanism
2 configured to provide repositioning of the fibers without the need for additional optical
3 alignment.

1 48. The system of claim 45, further comprising, a moveable input lens that
2 couples a selected fiber for delivery of a beam from the single laser source.

1 49. The system of claim 45 further comprising a fiber sensing mechanism.

1 50. The system of claim 45 wherein the laser source provides a continuous
2 laser spectrum,

3 51. A laser system, comprising:
4 a laser source;
5 a fiber switch coupled to the laser source;
6 at least first and second fibers coupled to the fiber switch; the first and second
7 fibers having very different core diameters; and
8 a laser delivery device coupled to the first and second fibers.